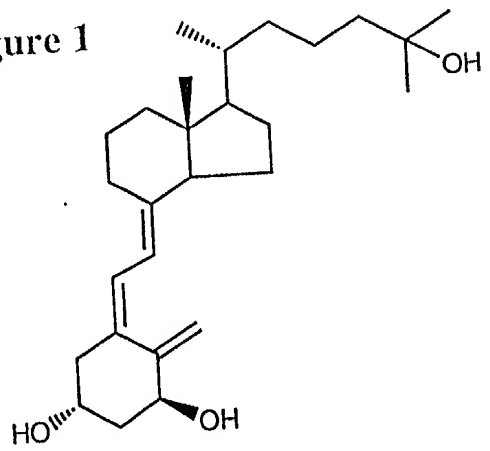
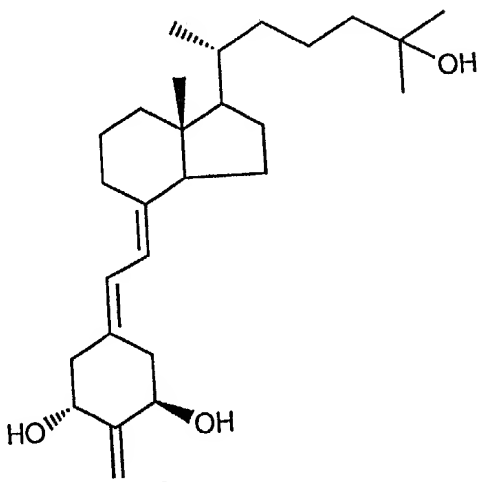
Figure 1



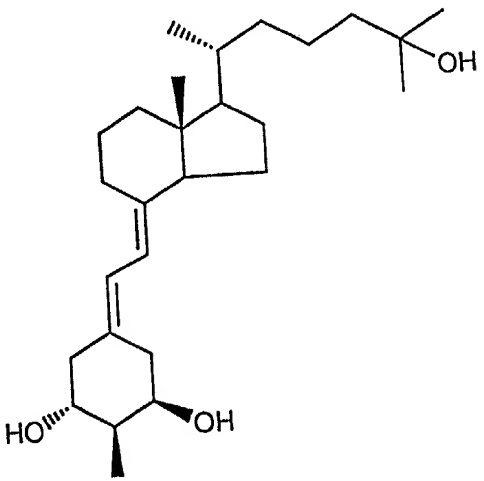
1

1α,25-dihydroxyvitamin D_3



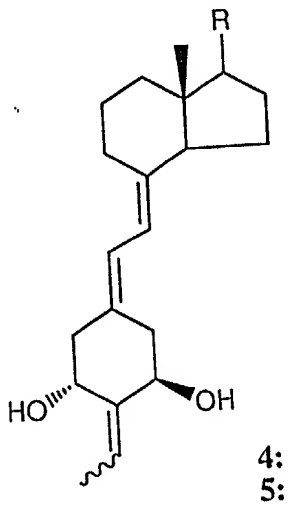
2

1α,25-dihydroxy-2-methylene-19-norvitamin D_3

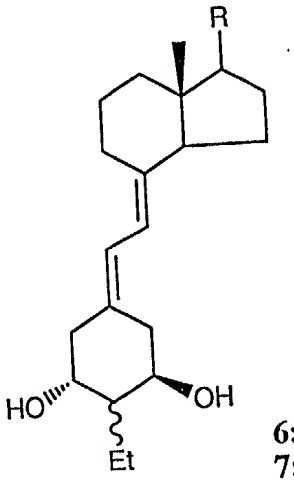


3

1α,25-dihydroxy-2α-methyl-19-norvitamin D_3

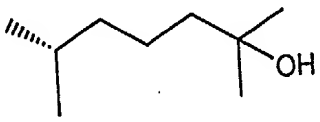


4: *E* - isomer
5: Z - isomer



6: 2α - isomer
7: 2β - isomer

a) R =



b) R =

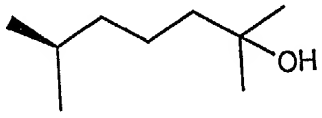
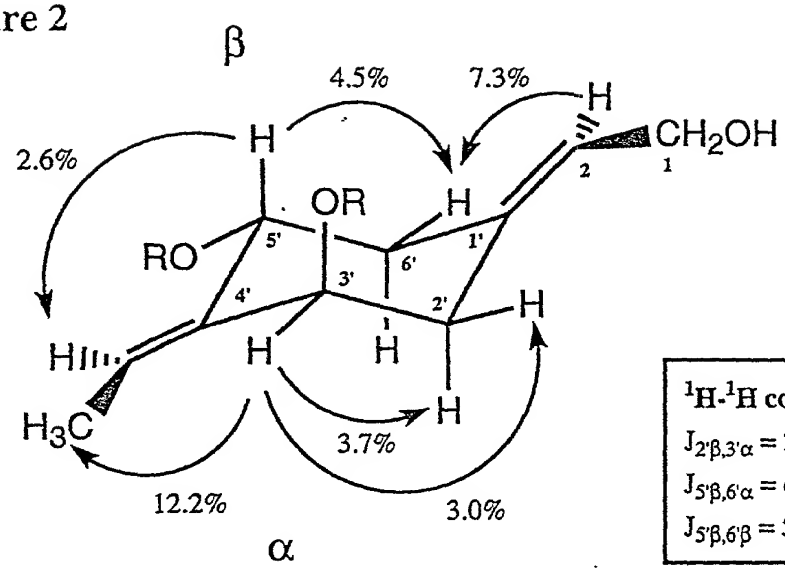
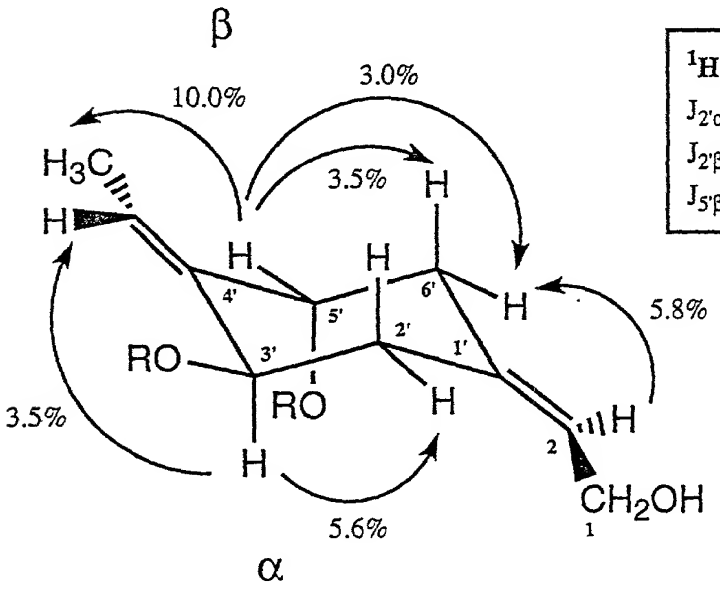


Figure 2



^{1}H-^{1}H coupling constants
$J_{2'\beta,3'\alpha}$ = 2.9 Hz
$J_{5'\beta,6'\alpha}$ = ca. 11 Hz
$J_{5'\beta,6'\beta}$ = 5.1 Hz



^{1}H-^{1}H coupling constants
$J_{2'\alpha,3'\alpha}$ = 5.0 Hz
$J_{2'\beta,3'\alpha}$ = ca. 11.5 Hz
$J_{5'\beta,6'\alpha}$ = 3.1 Hz

R = SitBuMe$_2$

Configurations and preferred conformations of 4'-ethylidene compounds **16** and **17** were determined by analysis of their ^{1}H NMR spectra and ^{1}H NOE difference spectroscopy experiments

Figure 3

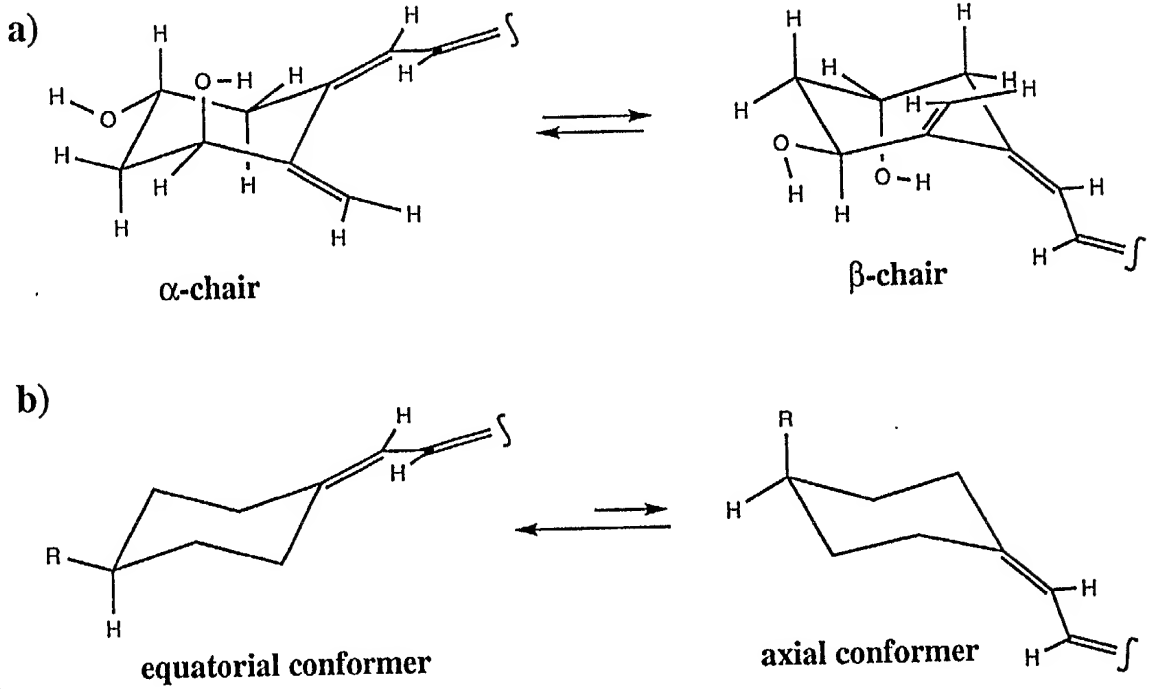
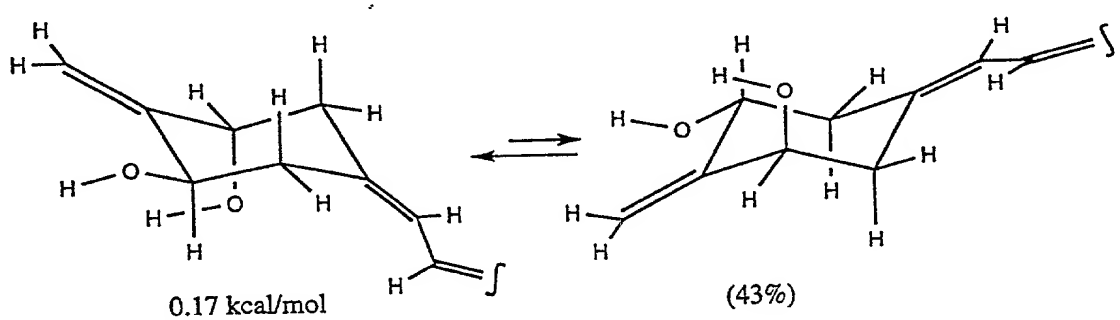


Figure 4

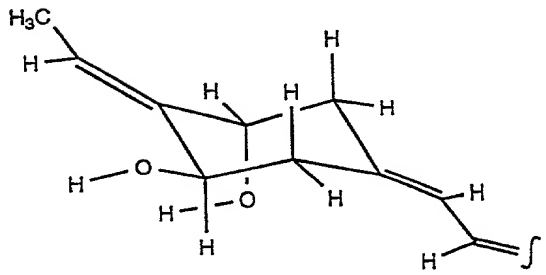
a)



0.17 kcal/mol
(57%)

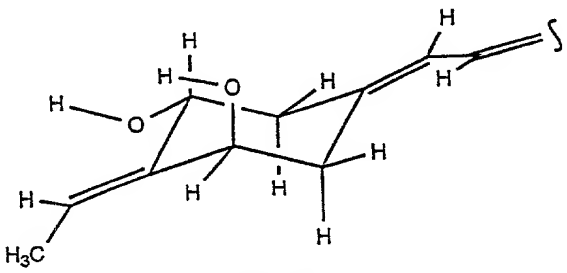
(43%)

b)



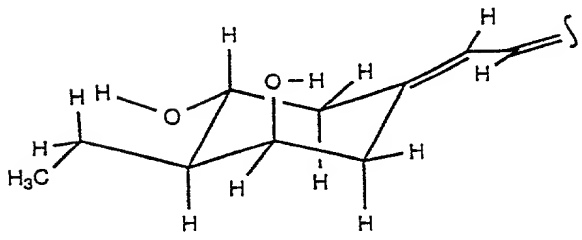
2.58 kcal/mol
(99%)

c)



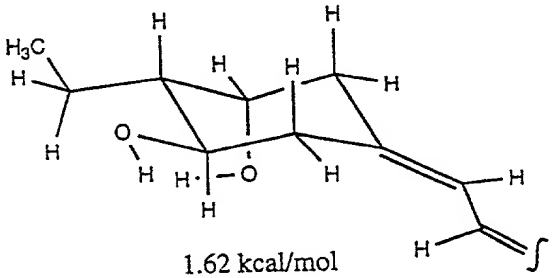
2.12 kcal/mol
(97%)

d)



1.85 kcal/mol
(96%)

e)



1.62 kcal/mol
(94%)

Figure 5 a)

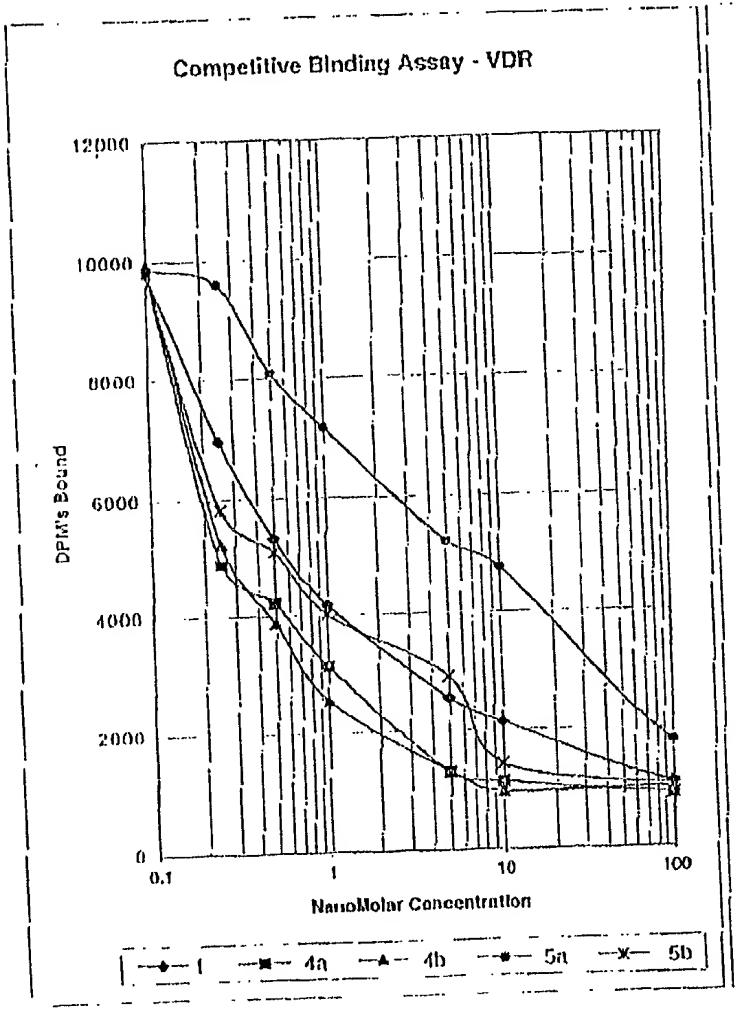


Figure 5 b)

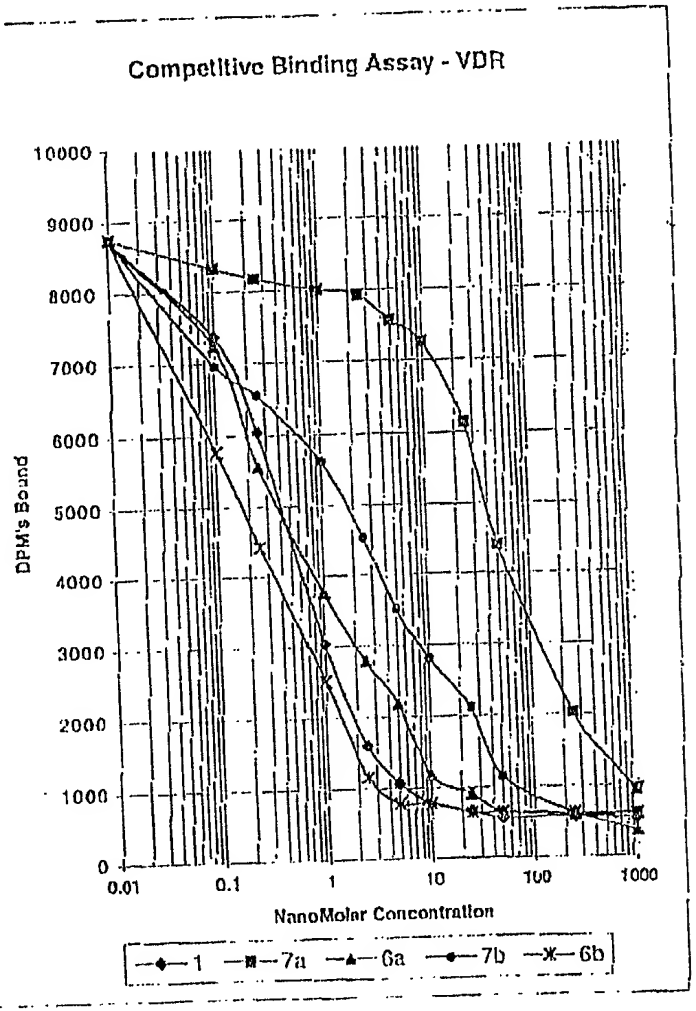


Figure 6 a)

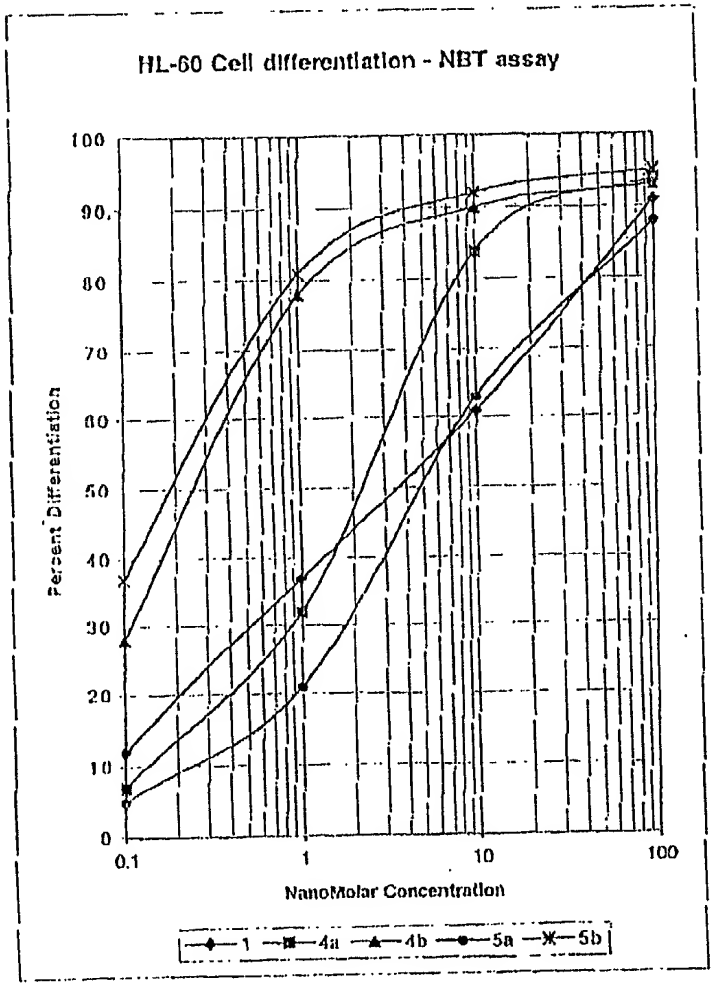


Figure 6 b)